

Remarks/Arguments:

Preliminary Matters

Claims 1-4, 6-7, and 9-23 are presently pending and all pending claims stand rejected. By this amendment, claims 1, 10, 14, 15, 18, and 21 are amended and claim 19 is canceled. Support may be found throughout the specification as originally filed. For example, see page 3, line 26 - page 4, line 10 and FIGs. 1 and 2. Applicants contend that no new matter is added. Reconsideration is respectfully requested in view of the above amendments and the following remarks.

Objection to the Claims

Section one of the Office Action recites claims 14 and 18 are objected to for informalities. Applicants herein amend claims 14 and 18 to remedy the informalities. Applicants contend that this amendment obviates the objection, and withdrawal of the objection to claims 14 and 18 is respectfully requested.

Objection to the Specification

Section two of the Office Action recites the disclosure is objected to because "'abutting a surface of the heat sink disposed opposite the fins against a heat generating component' is not described in the specification." Applicants traverse the objection to the specification and contend support is found throughout the specification as originally filed. For example, see page 4, lines 6-8 and FIG. 2 of the originally filed specification. Accordingly, applicants respectfully request that the objection to the specification be withdrawn.

Objection to the Drawings

Section three of the Office Action recites "...the step of 'abutting a surface of the heat sink disposed opposite the fins against a heat generating component' as in claims 10 and 21 must be shown..." Applicants traverse the objection to the drawings and contend that the step is illustrated in FIG. 2 of the originally filed drawings. No new matter is added. Accordingly, applicants respectfully request that the objection to the drawings be withdrawn.

Section four of the Office Action recites that “Claim 15 is rejected under 35 U.S.C. §102(b) as being anticipated by Lo (US 6,360,812).” Applicants respectfully submit that this claim is allowable over Lo for at least the reason set forth below.

a heat sink thermally coupled to said heat generating component, the heat sink having a base abutting the heat generating component and a plurality of fins disposed on a surface of the base opposite the heat-generating component for dissipating heat, the plurality of fins having faces parallel to one another, said parallel faces of the fins defining a recess,

said recess extending parallel to the base and at least partially defined by at least one of said fins and by a surface parallel to the base extending along a length of the fins, the recess having a depth smaller than the height of said fins, and the parallel faces of the fins and the surface parallel to the base supporting and guiding an edge of a circuit card.

Diagram illustrating a fin structure with various surface orientations relative to the base:

- faces perpendicular to base are parallel to one another
- face perpendicular to base
- face perpendicular to base
- surface not parallel to base
- surface not parallel to base
- fin
- base

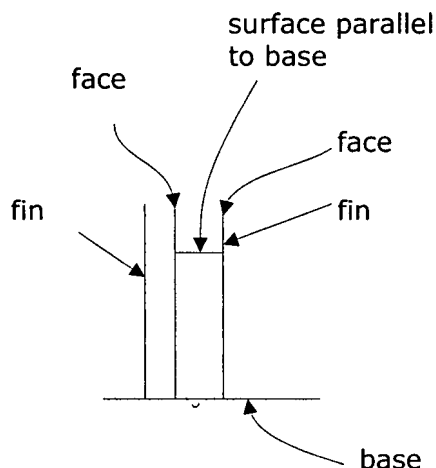
The surfaces of Lo are angled with respect to the plane of the base. Lo does not disclose, teach, or suggest, a "recess extending parallel to the base and at least partially defined by at least one of said fins and by a surface parallel to the base extending along a length of the fins, the recess having a depth smaller than the height of said fins, and the parallel faces of the fins and the surface parallel to the base supporting and guiding an edge of a circuit card" as recited in claim 15. As Lo fails to meet all of the features of claim 15, withdrawal of the rejection of claim 15 as anticipated by Lo is respectfully requested.

Section four of the Office Action also recites that "Claims 1-4, 6-7, 9, 18-20 are rejected under 35 U.S.C. §102(b) as being anticipated by Hughes et al. (US 5,883,784)." Applicants respectfully submit that these claims are presently allowable over Hughes for at least the reasons set forth below.

Claim 1, as amended, is directed to a heat sink and recites features that are neither disclosed nor suggested by Hughes. These features include:

one or more recesses, each recess at least partially defined by adjacent parallel faces of two adjacent fins extending perpendicularly from said base, the recesses defined in part by surfaces parallel to the base extending along the length of the fins, the recesses having a depth smaller than the height of said fins, and the adjacent parallel faces and the surface parallel to the base of each recess support the edge of a circuit card; and
a face of the base disposed opposite said fins, said base being configured to be mounted with said face abutting a heat-generating component.

This means that, in an exemplary embodiment, the recesses are partially defined by 1) adjacent parallel faces of the fins and 2) surfaces parallel to the base which extend along the length of the fins. The adjacent parallel faces of the fins and the surface parallel to the base support the edge of a circuit card. (See Figure below.)



Hughes discloses a mounting structure for heat conductively supporting a planar electric device. Hughes, however, does not disclose, teach, or suggest "the adjacent parallel faces and the surface parallel to the base of each recess support the edge of a circuit card." Instead, as shown in FIGs. 4 and 5 of Hughes, a clamp 22 is located within the recess. When an edge of a printed circuit card is inserted into the recess, lever 58 is pivoted so that clamp 22 presses against the edge of the card to support the device within the recess. In column 5, lines 53-65, for example, Hughes discloses that during operation, the clamp applies constant pressure to the edge region of a printed circuit board to hold layer 82 against the side surface. As Hughes does not disclose, teach, or suggest, "the adjacent parallel faces and the surface parallel to the base of each recess support the edge of a circuit card" as set forth in claim 1, the applied reference fails to meet all of the features of claim 1. Accordingly, applicants submit that claim 1 is allowable and withdrawal of the rejection of claim 1 as anticipated over Hughes is respectfully requested.

Independent claim 18, as amended, while not identical to claim 1, include features similar to the allowable features discussed above with respect to claim 1. Accordingly, applicants contend that independent claim 18 is also allowable over Hughes for at least the reasons set forth above and withdrawal of the rejection of claim 18 as anticipated over Hughes is respectfully requested.

Claims 2-4, 6-7, 9, and 20 include all the features of the independent claims from which they ultimately depend. Therefore, applicants contend claims 2-4, 6-7, 9, and 20 are also allowable for at least the reason their respective base claims are allowable. Accordingly,

withdrawal of the rejections of claims 2-4, 6-7, 9, and 20 as anticipated by Hughes is respectfully requested.

Claim Rejections Under 35 U.S.C. 103(a):

Section five of the Office Action recites "Claims 10-14, 16-17, 21-23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lo in view of Hughes et al (US 5,883,784)." Applicants respectfully submit that these claims are allowable over Lo and Hughes for at least the reason set forth below.

Claim 10, as amended, recites features that that are neither disclosed nor suggested by Lo and Hughes. These features include:

positioning the edge of the circuit card in the recess by advancing the card in the recess in a direction parallel to the base such that the edge of the circuit card is supported by the plurality of thermally conductive heat dissipating fins and by the surface extending parallel to the base.

Support for the claim amendments may be found throughout the specification as originally filed. For example, see page 4, lines 20-30 and page 6, lines 18-21.

As recited in the Office Action, Lo is silent as to a circuit card in sliding association with said recess, let alone a "circuit card is supported by the plurality of thermally conductive heat dissipating fins and by the surface extending parallel to the base." As described above, Hughes does not teach, disclose, or suggest that "the circuit card is supported by the plurality of thermally conductive heat dissipating fins and by the surface extending parallel to the base." Accordingly, applicants contend that none of the applied references meet the limitations of the claimed method as set forth in claim 10. Thus, applicants respectfully submit that claim 10 is allowable and withdrawal of the rejection of claim 10 as obvious over Lo in view of Hughes is respectfully requested.

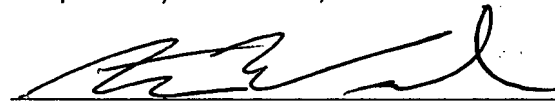
Independent claim 21, as amended, while not identical to claim 10, include features similar to the allowable features discussed above with respect to claim 10. Accordingly, applicants contend that independent claim 21 is also allowable over Lo and Hughes for at least the reasons set forth above and withdrawal of the rejection of claim 21 as obvious over Lo in view of Hughes is respectfully requested.

Claims 11-14, 16-17, and 22-23 include all the features of the independent claims from which they ultimately depend. Therefore, applicants contend claims 11-14, 16-17, and 22-23 are also allowable for at least the reason their respective base claims are allowable. Accordingly, withdrawal of the rejections of claims 11-14, 16-17, and 22-23 as anticipated by Hughes is respectfully requested.

Conclusion

In view of the above amendments and remarks, applicants submit that this application is now in condition for allowance, which action is respectfully requested.

Respectfully submitted,



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